DOCUMENT RESUME

ED 137 658 CG 011 243

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TITLE The Experimental Reduction of Stress Reaction by Cognitive Manipulation.
PUB DATE May 76
NOTE 11p.; Paper presented at the Annual Convention of the Midwestern Psychological Association (Chicago, Illinois, May 6-8, 1976)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage
DESCRIPTORS Adjustment (to Environment); *Affective Behavior; Cognitive Processes; College Students; *Emotional Response; Experimental Psychology; *Psychological Patterns; Psychological Studies; *Rational Therapy; Research Projects; Speeches; *Stress Variables

ABSTRACT

A cognitive appraisal of threat is believed to intervene between the appearance of a stressful stimulus and a stress reaction to the stimulus. The effect of a "rational" treatment on the appraisal of threat is investigated. Five groups of 13 college students each heard one of five treatment orientations before viewing slides showing the victims of automobile accidents. Subjects were divided into the following treatment groups: rational, content-denial, mystification, suppression, and control. While subjects viewed the slides, their heart rates and endosomatic skin potentials were monitored and self-reports of distress were obtained. A measure of avoidant behavior was obtained after the slide presentation. The results of the self-report measure indicated that the "rational" and "suppression" treatments led to significantly lower self-reports of distress than the other conditions. This suggests that "rational" treatment is effective in altering the appraisal of threat. These findings were not supported by physiological and behavioral measures. (Author/JLL)

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The Experimental Reduction of Stress Reaction by Cognitive Manipulation

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Presented at Midwestern Psychological Association
Chicago, May 6-8, 1976

CG 011 243

The Experimental Reduction of Stress Reaction by Cognitive Manipulation

Lazarus (1966) proposed a theory of stress and coping in which cognitive appraisals play a central role. A cognitive appraisal of threat presumably precedes every stress reaction. This appraisal process includes a primary appraisal in which the potential for harm is assessed, a secondary appraisal in which the availability of coping methods is evaluated and tertiary appraisals in which the effectiveness of on-going coping efforts is monitored. If the situation is evaluated as potentially harmful and no appropriate coping strategies are available, a stress reaction will occur. According to Lazarus, such stress reactions occur in three modes: negatively-toned affects (e.g., depression or anger), behavioral action-tendencies (e.g., attack or flight) and physiological changes.

Lazarus' framework can be used to interpret a large number of research findings (see Buck, 1975). Several studies (e.g., Spiesman, Lazarus, Mordkoff & Davison, 1964; Lazarus & Alfert, 1964; Lazarus, Opton, Nomikos & Rankin, 1965), including the present effort, have attempted to directly manipulate the appraisal process. Such studies have utilized the "short-circuiting of threat" paradigm, in which groups of subjects are given different pre-stimulus orientations before the presentation of stressful stimuli. Examples of stressful stimuli are films or slides depicting either fatal automobile accidents, crude circumcision rituals, or industrial accidents. As these stimuli are presented, self-report, behavioral, and/or physiological measures are taken. Differences among groups in their reactions to the stressful stimuli are assumed to relate to differences in their cognitive appraisals of the stimuli.

A variety of pre-stimulus orientations have been used. In the earliest studies, the pre-stimulus orientations were based on ego-defense theory. For example, in a "reaction formation" orientation, Spiesman, Lazarus, Mordkoff and Davison (1964) told subjects that adolescents undergoing a crude genital operation actually enjoyed the procedure. In later studies, psychotherapeutic procedures served as the basis for the pre-stimulus orientations. For instance, Folkins, Lawson, Opton & Lazarus, (1968) used systematic desensitization and its components as pre-film orientations.

The use of psychotherapeutic procedures as the basis for pre-stimulus orientations has intuitive appeal. When psychotherapy serves to reduce maladaptive stress-reactions, it may do so by altering the client's appraisals of the environment. In other words, changes in cognitive appraisals of threat may be the core of many therapeutic changes. By deriving pre-stimulus orientations from psychotherapy,

the "short-circuiting of threat" paradigm can serve as both an analogue method for studying psychotherapeutic approaches and as a method for investigating the appraisal process.

The present study was undertaken to investigate the effectiveness of an orientation based on Rational Emotive Therapy (RET) in reducing the cognitive appraisal of threat.

Method

Sixty-five male subjects heard one of five prestimulus orientations before viewing slides showing the victims of fatal automobile accidents. In pretesting, these ten accident slides had been chosen from a larger group of slides because they were rated as highly distressing. During the experiment, each slide was exposed for eight seconds and there was an eight-second inter-slide interval. Self-reported distress, heart rate and galvanic skin potential were monitored throughout the slide presentation. A behavioral measure was taken after the ten slides had been viewed.

Experimental manipulations.

Each subject heard one of five pre-slide orientations. One orientation was derived from RET. In this "rational" orientation, subjects were told that they should not be distressed by the slides because it is irrational to identify strongly with the pictured victims. These subjects were reminded that viewing the slides in no way increased the likelihood that they would be killed in a car accident.

Two types of "denial" orientations were used. The "content-denial" orientation encouraged subjects to appraise the slides in a manner which distorted the content of the pictures. Subjects in the content-denial group were told that they should not be distressed by the slides because the victims themselves were probably responsible for the accidents and that the victims experienced little pain because the accidents occurred so rapidly. The other denial orientation was called the "affect denial" treatment. In this condition, subjects were told that observing accident victims led to positive feelings of exhilaration, rather than to negative feelings of distress. This orientation involved a denial of the expected affective response to the slides.

A fourth orientation was called "suppression." This orientation instructed subjects to prevent themselves from becoming distressed by the slides through any strategy except inattention to the slides. It should be noted that this "suppression" treatment is not simply a no-treatment condition. People probably have personalized strategies for altering their appraisals. They may be more likely to utilize these strategies if encouraged to do so.

Subjects in the no-treatment control group were simply told that emotional reactions have affective and physiological components. They were not encouraged to adopt any particular appraisal.

All sets of instructions provided the same information about the slides and the wordings of the orientations were equated as much as possible. The "demand characteristics" (Orne, 1962) were maximized for all treatments except the no-treatment control conditions.

Based on the proported effectiveness of Rational Emotive Therapy (Ellis, 1962), the rational group was expected to be most effective in altering the threat appraisals. Thus, it was hypothesized that the rational treatment would lead to a lower stress reaction than the other treatments.

Dependent measures.

Self-report measure. After each of the ten accident slides, subjects rated their level of distress on a scale ranging from one (not-at-all distressing) to seven (extremely distressing).

Physiological measures. Heart rate and galvanic skin potential were monitored using standard equipment and standard electrode placements. Galvanic skin potential was monitored because Miller (1967) has suggested that, for this measure, the magnitude of the tonic response is related to cognitive activity and the number of phasic responses correlates with emotional responding.

Behavioral measure. Near the end of the experiment, each subject was asked to rank three additional slides in order of "distressingness" ostensibly for use in later research. He was then given the manual controls of the slide projector and instructed to inform the experimenter when he had made a decision. The experimenter surreptiously recorded the amount of time from the exposure of the first slide to the subject's indication that he had made a decision.

Post-experimental questionnaire. Studies of this type have rarely included an assessment of the effectiveness of the experimental manipulations. In the present study, an attempt was made to assess how much the pre-stimulus orientation influenced the subjects' thinking during the slide presentation. Subjects rated seven statements as to their similarity to what they were thinking while viewing the slides. Four of the statements were derived from the rational, content denial, and affect denial orientations. In addition, each subject rated the "reasonableness" of the pre-stimulus orientation that he heard.

Results

The central hypothesis of the study was that the RET-based orientation would be more effective than the other treatments in altering the threat appraisal.

Thus, compared to the other groups, the rational group was expected to exhibit lower "distress" ratings, lower heart-rate scores, fewer skin-potential phasic responses, and less avoidance behavior.

The results of the analysis of the self-report data are presented in Table 1. The outcome of a post hoc analysis of the treatment effect is shown in Table 2. The rational (i.e., RET-based) group had the lowest level of self-reported "distress" and was significantly lower than the content denial, affect denial, and no-treatment control groups, but the rational group did not differ significantly from the suppression group. Inspection of the ten trial means for the self-report measure suggested that the significant trials effect was due to differences in the contents of the slides rather than a pattern of habituation.

For the physiological measures, there was a significant effect for trials but no significant treatment effect. For the behavioral measure, the effect of the treatments failed to reach statistical significance.

The results of the post-experimental questionnaire include some important findings. In this questionnaire, subjects rated statements as to their similarity to what they were thinking while viewing the slides. It was expected that the content denial, mystification and rational groups would give significantly higher ratings to those statements which corresponded to their particular pre-slide orientations. A one-way analysis of variance was computed for each item to determine the effect of the treatments upon the ratings. As shown in Table 3, the rational treatment was associated with significantly higher ratings for the appropriate (i.e., rational) item. However, the content denial and affect denial groups did not give significantly higher rating to their respective items. In addition, compared to any other group, the content denial group rated its pre-slide orientation as significantly less reasonable.

Discussion

The results of the self-report measure suggest that the rational treatment was more effective in reducing threat appraisals than either type of denial orientation or the control condition. However, the rational orientation was not more effective than a treatment which encouraged the subject to choose his own strategy for altering his appraisals. The differences between the rational and the two denial groups cannot be attributed to differences in demand characteristics (Orne, 1962). In all three sets of treatment-instructions, it was strongly implied that the experimenter expected the subject to report low distress ratings. Unexpectedly, the suppression group also had significantly lower scores than both denial groups and the difference between the suppression and control groups approached

significance. This suggests that the subject is able to choose better methods for changing his appraisals when encouraged to do so than when denial orientations are presented to him or he is not encouraged to adopt a coping strategy.

The finding of a significant treatment effect in the self-report measure, but not in the physiological or behavioral measures is consistent with numerous studies (e.g., Weinstein, Averill, Opton, & Lazarus, 1968) which report low correlations among self-report, physiological and behavioral variables. The physiological measures may have failed to reflect treatment differences because of the brevity of the pre-slide intervals. "Short-circuiting of threat" studies which have reported significant treatment effects for physiological measures typically utilize longer anticipatory intervals than the eight-second intervals used in this study. The treatments may not have affected the behavioral measure to a statistically significant degree because of the nature of the instructions used in the procedure. The requirement that subjects make a decision may have introduced several sources of error (e.g., individual differences in decision-making ability).

The results of the post-experimental questionnaire suggest that two of the experimental manipulations did not have the expected influence on the subjects. Members of the content denial and affect-denial groups apparently did not adopt the proposed orientations, at least not in the form in which they were presented. This has several implications. First, these findings indicate that the rational orientation may be more easily adopted by subjects than the other orientations. If this interpretation is correct, it speaks well for the use of logic in altering people's threat appraisals. Secondly, the questionnaire results have methodological implications for researchers using the "short-circuiting of threat" paradigm or any design which involves cognitive manipulations. The effectiveness of these manipulations must be assessed. Studies using the "short-circuiting of threat" paradigm have rarely included manipulation checks. It has been assumed that because subjects were exposed to a particular orientation before the viewing of slides or a film, they necessarily adopted that orientation during the presentation of the stressful stimuli. Future studies should include an assessment of the effectiveness of the cognitive manipulations.

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Table 1

Analysis Variance for the Effects
of Treatments and Trials on
Self-Reports of "Distress"

Source	MS	df	F
Treatments (A)	67.79	4	4.03*
Trials (B)	17.94	9	25.63*
A X B	.96	36	1.37
S (A)	17.32	60	
SB (A)	.70	540	

* $p < .01$

Table 2

Means of Treatment Groups on
Self-Reports of "Distress"

Group	Mean
Rational	3.45[b]
Suppression	3.55[b]
Control	4.58[a]
Content-Denial	4.88[a]
Mystification	4.96[a]

Note.--Groups with same superscript are not significantly different ($p < .07$).

Table 3

Ratings of Treatment Groups on
Post-Experimental Questionnaire Items

Orientation from which item was derived	Groups				
	Rational	Content-Denial	Mystification	Suppression	Control
Content-Denial	2.23	3.54	2.31	1.77	1.85
Mystification	2.23	1.77	2.54	2.08	2.39
Rational	5.15*	2.15	2.46	3.00	2.46

*This group was significantly different ($p < .05$) from other groups on this item.